MESSAGING SYSTEM

5 BACKGROUND OF THE INVENTION

The present invention relates to a system for communicating information over a network.

The Internet is an interconnection of individual computer networks that are coordinated to use a compatible
10 data transmission format such as hypertext markup language. The Internet makes available to an end user, or client, a vast number of individual web sites, each having a unique Universal Resource Locator (URL) address by which that site may be addressed.

15 Historically, any client with a desktop computer and a modem could access the Internet through an Internet service provider (ISP). Once connected through an ISP, clients have available a wide variety of electronic services such as e-mail, along with access to news services, sports
20 and stock tickers, vendors, educational materials, and numerous other resources.

Currently, the Internet is designed so that the client must take the initiative to find the information sought. To this end, the Internet is typically navigated
25 through an interface called a web browser, displayed on a monitor or other device. Through the web browser, an ISP will frequently provide a start page with an assortment of search tools and hypertext links from which the desired web site may be found. Alternately, if the client knows the URL
30 of the page sought, it can simply be typed into the browser.

A navigation system where the client must take the initiative to find the information desired is often referred to as "pull" technology because the client metaphorically pulls the information from the web sites. The advantage of
35 pull technology is its flexibility in adjusting to the

instantaneous interests of the client. Pull technology is ideally suited for Internet navigation through a desktop computer or network terminal because the size of the display permits the graphical interface necessary for easy Internet
5   browsing.

With the exponential growth seen in the Internet during recent years, a larger variety of web-enabled devices have become available. Such devices include hand-held devices, alphanumeric pagers, and cell phones. These
10   devices are not ideally suited to pull technology, though, because they either lack sufficient bandwidth or display size. In addition, many of these devices do not have convenient input interfaces.

In response, many attempts have been made at a
15   feasible "push" technology by which a network provider uses a static user profile to select information to send to the client. The problem with these attempts was that the instantaneous interests of the client often differed from that suggested by the static profile, and any attempt to
20   compensate by increasing the range of information sent leaves the client feeling overwhelmed by marginally relevant content.

A refined approach has been to employ the use of "intelligent agents" to retrieve specific information
25   requested by the user. With this approach a client requests information such as the departure time and gate number of an airline flight for which the client has a ticket. The agent software then "scrapes" web sites to retrieve this information. Unfortunately, even this limited approach has
30   significant drawbacks in that the client must register a specific request for each piece of data to be tracked. Further, the agent must make a significant commitment to maintenance because changes in the layout of web pages or format of the data may render the agent software incapable
35   of retrieving the requested information. Finally, if a

client has multiple Internet devices, *e.g.* an alphanumeric pager, a "palm pilot", and a personal computer, such a system lacks the capability of determining the optimal device through which to convey the requested information.

5   What is desired, therefore, is a system for delivering network content to a mobile Internet device that is highly relevant to the client, that is indifferent to the particular format in which the data is stored, and is sensitive to the routine of the client so that desired

10   information will be transmitted through the optimal Internet-enabled device.

BRIEF DESCRIPTION OF THE DRAWING

The FIGURE shows a schematic of an exemplary

15   embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Overview of System Components and Operation

The FIGURE illustrates the general architecture of

20   a system that operates in accordance with the present invention. The system may be used with any conventional hardware and/or software used to communicate over a global network, and particularly over the Internet. As used herein, the Internet refers to a collection of

25   interconnected (public and/or private) networks that are linked together by a set of standard protocols (such as TCP/IP and HTTP) to form a global, distributed network. While this term is intended to refer to what is now commonly known as the Internet, it is also intended to encompass

30   variations which may be made in the future, including changes and additions to standard protocols.

The preferred embodiment includes a reverse portal 8 that provides services to a user 9 who desires access to network based content through various devices such as a

pager 11, a mobile device 12, a fax 13, and an e-mail 14
depicted in the FIGURE. These example devices are intended
to be illustrative only, and not an exhaustive listing of
the types of devices that may be used with the system. The

5   reverse portal 8 is a network server capable of receiving
information over the Internet and capable of transmitting
information (or otherwise providing information to be
transmitted to another device) electronically to the devices
11, 12, 13, and 14. The components and functions required

10   to communicate over the Internet are described more fully in
U.S. Patent No. 6,029,141 and U.S. Patent No. 6,064,980, the
complete disclosures of which are herein incorporated by
reference. The devices 11, 12, 13, and 14 may be any type
that allows a user to receive, interactively or otherwise,

15   information transmitted electronically
by the reverse portal 8.

Through a registration function 10, the user
(recipient) 9 provides the reverse portal 8 with
configuration information 17 including the type of, and

20   communication numbers for, selected devices 11, 12, 13, and
14. The user 9 may also optionally register a user profile,
which will be more fully described later. In response, the
reverse portal 8 provides the user 9 with a unique number or
other identification character sequence 19. The number 19

25   is referred to herein for matters of convenience as a flash
number. It is to be understood that content may be provided
to any number of devices, as desired.

The system further includes a client content
selection function 25 by which the user 9 selects the

30   particular network content he or she wishes to receive.
This function is accomplished by providing the flash number
19 to selected client companies 33, 34, 35, and 36 from whom
service is desired. Any number of client companies may be
selected as desired.

After a client company has received the flash number 19, the client companies 33, 34, 35 and 36 may provide information to the reverse portal 8 in any manner, such as the client-company transmission function 40 depicted

5   in the FIGURE. The transmission function

40 preferably transmits an encrypted data stream 20 to the reverse portal 8 that includes the flash number 19 to identify the relevant user 9 and the information to be relayed to the user 9.

10   Upon receipt of the encrypted data stream 20 from a client-company, the reverse portal 8 performs a server-based message processing function 55 and a device independent message gateway function 70 by which the reverse portal converts the protocol of the data stream 20 to match

15   that of the client's devices 11, 12, 13, and 14 and relays the information to the user 9. The data 73 from the gateway function is then provided to the user 9. Alternatively, the processing function 55 may provide the data directly to the user 9. The reverse portal 8 may also optionally use

20   any user profile provided by the client to select the optimal device or devices through which to transmit the received information, as more fully delineated later.

By allowing the client to select the specific information desired, a dramatic improvement over traditional

25   push-based technology is achieved. Whereas current push-based technology uses a static user profile to predict the instantaneous wishes of the user the present system allows the user to selectively control the specific information desired. Any necessity to "scrape" web sites for desired

30   information is also obviated.

Moreover, the web-based registration function allows the user to receive information from client companies in a variety of data transmission protocols or formats because the independent message gateway function 70 converts the

data to the device-specific protocol prior to the transmission to the user.

Initially, the user 9 registers with the reverse portal 8 the specific network devices to which the user 9 wishes to receive data through the reverse portal 8. The information provided in the registration function 10 preferably includes the type of each device, an access method (fax number, e-mail address, web address, etc.) along with any standard information protocols that the device is capable of deciphering. The user may choose to supply a wide variety of message termination devices ranging from alphanumeric pagers, fax machines, e-mail addresses, cellular phones, and even voice phones. This information allows the reverse portal to act as an intermediary between the user and the client-companies from which information is desired, and also allows the reverse portal to receive information in any standardized data protocol and convert it to the specific protocol needed by the user's device.

Moreover, the registration function 10 may also optionally include information to develop a user profile from which the reverse portal may determine the optimal device to which information should be sent if more than one device is a possible recipient of the relayed data. Such optional information may include the work-hours and time zone of the client, work and home fax numbers, e-mail addresses, time-of-day preferences, day of the week preferences (e.g., Monday-Friday but not Saturday or Sunday), size of message restrictions (e.g., no files greater than a predetermined size), importance of message identities so that important ones are received first or non-important ones are filtered out, and any other information by which the reverse portal may use to identify an optimal recipient device. In addition, the profile may

likewise include a list of client companies that are restricted from sending messages to the client.

As also shown in the FIGURE, in the registration function 10, the user 9 may request access to standardized information streams such as sports tickers, stock tickers, and news tickers as a few examples. The reverse portal 8 may maintain a constant connection to, or otherwise periodically check, a variety of such streams and may selectively forward such data to one or more users.

The client company selection function and client company transmission function contemplate that the user may determine the specific content to be relayed by providing a client-company with the client's flash number along with instructions as to what content should be provided. For example, a user may provide an online broker with the flash identifier along with instructions to relay any price changes in the user's portfolio over or below a specified percentage. This system may place an additional burden on the client companies, who may need to adapt their servers to track additional variables. In general, a new record for the flash number may be added to the customer database. In addition, existing systems which today might instruct an individual in a call center to contact the customer may likewise be modified to send the message request to the reverse portal server. It is envisioned that the client-company/reverse portal message exchange may use standard secure Internet communication schemes.

The server-based message processing function may receive and authenticate encrypted transmission requests from the various registered client companies. The server evaluates parameters within the recipient's profile and uses this information to identify the optimal device(s) upon which to terminate the message.

To illustrate the utility of this function, assume that the user purchases airline tickets from an Internet

travel agent on short notice and wishes to receive confirmation as soon as possible. The user gives the Internet travel agent the appropriate flash number, who sends the information to the reverse portal in ASCII format.

5 From the user profile, which contains the home and office e-mail addresses, the work schedule, the time zone of the client, etc., the reverse portal determines that the optimal device is a cell phone. The reverse portal then uses a text to speech engine to convert the message into audio samples

10 that are then played over a voice connection through the user`s cell phone.

The reverse portal may contain the necessary software and network connections to permit content to be provided to a variety of wired and wireless devices. One

15 advantage of this system is, unlike traditional systems, the client company may not be required to know the specific protocol or message format for the intending terminating device.

The terms and expressions employed in the

20 foregoing specification are used therein as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the present

25 invention is defined and limited only by the claims that follow.